

REMARKS

Claims 1-17 are pending in the Application. Claims 1-4, 11, 12, and 14-17 stand rejected. Claims 1 and 14 are independent claims.

The Applicant wishes to thank the Examiner for indicating that each of claims 5-10 and 13 would be allowed if rewritten as an independent claim incorporating all feature of the base and any intervening claim. At this time, the Applicant wishes to defer rewriting any one of the claims 5-10 and 13. The Applicant believes that claims 1 and 14, as written, are patentable, and the Applicant wishes to point out patentability of claims 1 and 14 without amending the claims.

Claims 1 and 14 stand rejected under 35 U.S.C. '102(e), as allegedly being anticipated by Lo (U.S. Pub. 6,806,114).

Claims 1 and 14 recite semiconductor optical amplifiers where “the gain waveguide is disposed on the grating layer in a direct contact with the first grating.”

According to the United States Court of Appeals for the Federal Circuit, a claim is anticipated only if a single prior art reference sets forth all features of the claim (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)).

In rejecting claims 1 and 14, the Office Action indicates that the waveguide layer 2 disclosed in Lo is equivalent to the gain waveguide of claims 1 and 14 (the present Office Action page 2). To support the assertion, the Office Action points to Lo’s statement that a “laser beam can be generated in the direction of 14 or 15” (id.). Moreover, the Office Action indicates that FIG. 7 of Lo illustrates a first grating 75 that is in direct contact with the waveguide (id.). As such, the Office Action indicates that Lo sets forth the above feature.

Lo, as read by the Applicant, discloses a plurality of Distributed Bragg Reflector structures (the “DBR structures”) containing a grating 4 that is separated from a gain

medium/active region 1 by a carrier reservoir structure 3, 21, and 31 (FIG. 1-7). According to Lo, the grating 4 is in a direct contact with a waveguide layer 2 instead (column 4, line 19-20).

Lo, however, does not disclose that the waveguide layer 2 in a direct contact with the grating 4 is the **gain waveguide** of claims 1 and 14. As noted in the Office Action, Lo discloses that “a laser beam can be generated in the direction of 14 or 15” (column 4, line 45-46). However, nowhere does Lo disclose that the laser beam is generated **by the waveguide layer 2** in direction 14 or 15 to raise an inference that the waveguide layer 2 is a gain waveguide.

Moreover, Lo affirmatively teaches that the waveguide layer 2 is not a gain waveguide by providing an independent gain medium 1 that is separated from the grating 4 by, at least, carrier reservoir structures 3, 21, and 31 (FIG. 1-7), and by teaching that its waveguide 2 and the gain region 1 constitute **two of the three independent main sections** of the DBR structure (see column 4, line 11-16).

Therefore, the waveguide layer 2, as disclosed in Lo is not equivalent to the gain waveguide of claims 1 and 14. It, as the name suggest, is merely a layer that guides electromagnetic waves.

As such, Lo, at best, sets forth a plurality of DBR structures where a non-gain waveguide is disposed in direct contact with the grating. Alternatively, Lo, at best, sets forth a plurality of DBR structures comprising a gain medium 1 that is separated from the grating 4 by, at least, the carrier reservoir structure 3, 21, and 31. Lo, however, does not set forth or anticipate semiconductor optical amplifiers where “the **gain waveguide** is disposed on the grating layer **in a direct contact with the first grating,**” as recited in claims 1 and 14. As such, the Applicant respectfully requests withdrawal of the present rejections.

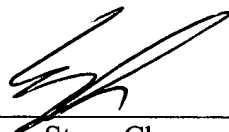
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Other claims in this application are each dependent on the independent claims 1 and 14 and believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of the patentability of each on its own merits is respectfully requested.

If any issues remain which may be best resolved through a telephone communication, the Examiner is requested to kindly telephone the undersigned telephone number listed below.

Respectfully submitted,

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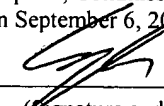
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